BY ORDER OF THE COMMANDER
AIR FORCE SPACE COMMAND

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AIR FORCE SPACE COMMAND
Supplement 1

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Flying Operations

H-1 HELICOPTER OPERATIONS PROCEDURES

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The OPR for this supplement is HQ AFSPC/DOSH (Capt William B. Thomas). This supplement implements and extends the guidance of *Air Force Instruction* (AFI) 11-2H-3, Volume 3, *H-1 Helicopter Operations Procedures*, 1 November 1999. The AFI is published word for word without editorial review. Air Force Space Command (AFSPC) supplemental material is indicated in bold face. This supplement describes AFSPC's procedures for use in conjunction with the basic AFI. Requirements of this supplement apply to all AFSPC helicopter flying units and AFSPC helicopter aircrew personnel. It does not apply to Air National Guard or Air Force Reserve Command units. Users should send comments and suggested improvements on AF Form 847**, Recommendation for Change of Publication**, through channels to HQ AFSPC/DOSH, 150 Vandenberg St., Ste 1105, Peterson AFB CO 80914-4200. Upon receipt of this integrated supplement discard the Air Force basic publication.

1.2. Mission. The mission of AFSPC helicopter flights is to provide helicopter support to each parent space wing along the full spectrum of conflict. Helicopters provide a flexible, rapid response platform to support space wing efforts to generate and/or launch sorties, to ensure the physical security of ICBM weapon system components and high-value space-launch systems, and to support operations and maintenance in sustaining the ICBM alert rate and the ability to launch spacecraft.

1.4. Unless otherwise noted in this supplement, HQ AFSPC/DO is the waiver authority for this supplement.

1.5.3. (Added) AFSPC helicopter units will publish a unit supplement/operating instruction to AFI 11-2H-1V3 consistent with guidance in AFI 11-2H-1V3 paragraphs 18.1.1., 18.1.2., and 18.1.3. Forward a copy of this supplemental operating instruction (Chapter 18), to 20 AF/DOH for review prior to publication. 20 AF/DOH will forward unit supplemental operating instructions to HQ AFSPC/DOSH for approval once the review has been completed.

2.1. HQ AFSPC/DOSH is the functional manager for helicopters within AFSPC.

2.1.3. (Added) Operational Control Reporting Procedures. Refer to AFSPCI 10-202 Vol 1, ***AFSPC Reporting System***, for operational reporting guidelines, requirements, and formats.

2.1.4. (Added) Mission Clearance Decision. The final decision to delay a mission may be made either by the unit commander or the aircraft commander when, in the opinion of either, conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the aircraft commander.

2.2. Mission commanders should not be primary crewmembers on any aircraft. This does not preclude the mission commander from flying when necessary to observe the progress of the mission, but their primary duty is to be available to assure the successful accomplishment of all aspects of the mission.

2.2.1. (Added) Aircraft Commander Responsibility and Authority. An aircraft commander is designated on the flight authorization, in accordance with AFI 11-401, *Flight Management.* Aircraft commanders are:

2.2.1.1. In command of all persons aboard the aircraft.

2.2.1.2. Responsible for the welfare of the crew and the safe accomplishment of the mission. This begins upon notification of the mission and terminates upon mission completion.

2.2.1.3. Vested with the authority necessary to manage their crew and accomplish the mission.

2.2.1.4. The final mission authority and will make decisions not specifically assigned to higher authority.

2.2.1.5. The final authority for asking for and accepting any waiver affecting their crew or mission.

2.2.1.6. Charged with keeping the applicable commander informed concerning mission progress and/or difficulties.

2.5.4. (Added) Other noncurrent or unqualified crewmembers may perform in their primary crew position on any mission when under direct supervision of a qualified instructor pilot or pilot flight examiner or qualified instructor or flight examiner in the respective crew position. Non-pilot crewmembers noncurrent or unqualified for mission items may perform FCFs.

2.5.5. (Added) To allow newly assigned copilots to learn their unit's flying mission as effectively and quickly as possible, they should not be assigned any non-flying related additional duties prior to the end of their first two months on station.

2.6.1. Minimum crew for actual or simulated instrument procedures for AFSPC aircraft is the aircraft commander and copilot.

2.6.2. Minimum crew for low-level, tactical and formation operations at or above 100' AHO is a mission qualified aircraft commander and a mission qualified copilot. Flight below 100' AHO is not authorized. Reference para. 10.1.1. and 10.2.3.

2.6.4. Flight engineer, if assigned.

2.6.5. Minimum crew for unaided night operations is an aircraft commander and a copilot. "Contingency missions" reference does not apply to AFSPC.

2.6.8. The phrase, "or mission qualified flight engineer (outside three rotor disks)," is not applicable to AFSPC.

2.6.9. (Added) Minimum crew for convoy operations is one qualified aircraft commander and one copilot.

2.6.10. (Added) Minimum crew for MEDEVAC/MAST is one qualified aircraft commander, one copilot, one competent medical authority (flight surgeon, med tech, or civilian equivalent). Flight engineers are recommended if assigned.

2.7. Maintain one mission kit per aircraft.

Table 2.1. Minimum Mission Kit.

Flight Documents	Flight Publications
- (Added) ORM Worksheets	- (**Added**) LF Diagrams

2.8.1. (Added) Air Force Space Command has no sanctioned mission that requires aircrew to be placed in alert status. However, units do have operational requirements that may require aircraft to be placed on alert status and crews to be on a standby status to meet mission or wing requirements. In order to meet these requirements units will detail their standby procedures in their Chapter 18. Reference AFI 11-202 Vol 1 AFSPC Supplement paragraph 9.4.8.

2.8.2. Standby Procedures:

2.8.2.1. (Added) Standby Duty. Standby duty is defined as a period of time during which a crew may be required to launch on a mission for which a firm departure time cannot be established. Aircrew members will be provided a 12-hour inviolate crew rest period preceding the start of standby duty and must be allowed to remain in crew rest during the standby period until called in for duty. Unit commanders, mission commanders, and operations officers must consider aircrew availability and mission priority when determining periods of standby duty. Commanders should consider factors such as crew currency requirements, fatigue, additional duties, etc. when determining length of standby duty period.

2.8.2.2. (Added) Standby Aircraft. Aircraft may be placed in a "cocked" status to posture for mission response time requirements during normal duty hours. An aircraft may be placed in "alert" status (IAW T.O. 00-20-5, *Aerospace Vehicle Inspection and Documentation*) without a dedicated crew during increased THREATCONs. Cock aircraft in accordance with T.O. 1H-1(U)N-1, UH-1N Flight Manual.

2.9.1. (Added) Aircrew Selection. The flight commander will select FCF crewmembers based on their expertise in the aircraft. Solid flying skills and thorough systems knowledge are essential. Their experience in the respective crew position must provide an adequate foundation for more responsibility. Crewmembers FCF certified in the same MDS at a previous assignment may continue to maintain FCF certification at a new unit with the same MDS.

2.9.2. (Added) FCF training will be accomplished IAW the UH-1N Functional Check Flight Certification Syllabus. 2.9.3. (Added) FCF Copilots. The primary role of the FCF copilot is to read the checklist, record data and to assist the pilot in maintaining situational awareness. FCF certified copilots will be thoroughly familiar with FCF Checklist procedures, the parameters of each maneuver, and how to record data. Copilots will not be in control of the aircraft during FCF maneuvers.

2.12. (Added) Supervisor of Flying (SOF)/Operations Duty Officer (ODO) Responsibilities. The unit commander is responsible for every aspect of the flying environment. Unit commanders will establish procedures to ensure that the operations duty desk is manned during periods of flying activity within the local flying area. Unit commanders may designate a SOF/ODO program manager responsible for maintaining training program records, SOF/ODO fly away kits, read files, quick reaction checklists, publications, forms and any other items associated with the SOF/ODO program. Unit will develop local procedures for how to execute the function of the operations duty desk. As a minimum, local supplements

will address SOF/ODO responsibilities/ duties and unit leadership expectations for execution of these duties, procedures for assisting unit aircraft during emergency situations, flight following procedures and requirements, duty desk requirements, procedures for handling short notice support requests. Paragraph 2.12.1. through 2.12.4 outline the minimum essential elements required of the SOF and ODO to ensure the positive supervision and control of AFSPC flying activities.

2.12.1. (Added) Supervisor of Flying (SOF). The SOF is the unit-designated representative to ensure the safe and efficient conduct of flying operations on a daily basis. The SOF provides efficient supervision and control of all unit aircraft and flying activities and assesses any need for change in operating status. The SOF must be a qualified pilot in the unit aircraft and mission. The SOF will be in the unit and readily available to report to the duty desk in the event of an emergency, contingency or to execute the duties of the SOF as stipulated in the unit supplement. The SOF may be out of the building for short periods of time provided he/she is in direct radio contact with airborne aircraft. The SOF will review and initial the risk assessment and accomplish the aircrew briefing prior to their launch.

2.12.2. (Added) Operations Duty Officer (ODO). The ODO is an assistant to the SOF. The SOF and ODO may be the same person. The ODO is responsible for manning the operations duty desk in the absence of the SOF.

2.12.3. (Added) Training Program. Prior to accomplishing SOF/ODO duties each individual will complete the unit established training program. The unit will maintain a listing of who has completed this training.

2.12.4. (Added) Duty Desk. During local flying, the unit duty desk is the focal point for information and schedule execution. The designated SOF or ODO will occupy the duty desk when unit-flying operations are in progress.

3.4. All briefings will be completed in a professional atmosphere and manner. Accomplish all checklists with strict discipline using the challenge and response method. Emergency Procedures Checklists should employ the "CHALLENGE – RESPONSE – RESPONSE" method. **3.4.1. (Added) Weight** and Balance and TOLD must be computed prior to briefing. Refer to **Chapter 16.**

3.6.3. (Added) Minimum Taxi Obstruction Clearance Criteria. Without wing walkers, avoid taxi obstructions by 25 feet; with wing walkers, by 10 feet. When taxi clearance is doubtful, use a wing walker.

3.8.1. (Added) Normally a radar altimeter is set at the appropriate autorotational flare altitude, however for overwater, tactical, night or NVG operations set at least one radar altimeter to the appropriate minimum altitude for that type of flight.

3.11.1.1.2. (Added) A pilot will record and/or read back all ATC clearances except when ATC instructions require immediate execution and read back would interfere with the timely performance of aircrew duties.

4.1.1. (Added) Unit current weight and balance data must include as a minimum, the following items:

4.1.1.1. Computed DD Forms 365-4 reflecting configurations applicable to normal unit operations.

4.1.1.2. Equipment Weight Listing (a list of commonly carried equipment and its weight). 4.1.1.3. Equipment Configuration List (lists or diagrams depicting configurations applicable to normal unit operations.

4.7. (Added) Seat Cushions and Back Supports . Any seat cushion and/or back support utilized in the helicopter must be secured to the aircraft. The seat construction in the aircraft must remain the same.

5.3.1.5. Instructor pilot candidates may perform or supervise simulated emergencies during initial evaluations under the supervision of a flight examiner pilot not in a pilot seat if the other pilot at the controls is instructor or flight examiner qualified in the maneuver.

5.3.2.1.1. (Added) All AFSPC slide areas established after 1 May 1999 must comply with the requirements of AFMAN(I) 32-1123, *Airfield and Heliport Planning and Design*. The particular information for helicopter landing areas is found in Chapter 4, and it is imperative that unit commanders review this chapter prior to building any new slide areas. Units must coordinate their new slide area plans through HQ AFSPC/CE to confirm compliance with AFMAN(I) 32-1123.

5.3.2.1.2. (Added) AFSPC slide areas established prior to 1 May 1999 must meet a minimum length criterion of 1,000 feet. Additionally, all other criterion must comply with AFMAN(I) 32-1123.

5.3.2.1.3. (Added) Units must have a one-time Base Civil Engineering survey of all slide areas to determine the actual slope, size, and soil/surface conditions and provide documentation of the results to the unit. Units must ensure that their slide areas are in compliance with the new requirements of AFMAN(I) 32-1123, which was published 1 May 1999. Units will forward a copy of all survey results to HQ AFSPC DOSH.

5.3.2.1.4. (Added) The unit commander must certify slide landing training areas annually. The certification will include:

5.3.2.1.4.1. An inspection of the area for general slide landing suitability. The area must be free of debris, obstructions, uneven terrain, and other hazardous conditions.

5.3.2.1.4.2. (Added) A flight planning map/depiction of the slide area should highlight all normal and unusual conditions. For example: slope, size, magnetic directions, and location of any known obstructions (wind socks, tires, etc.).

5.3.2.1.4.3. (Added) Special attention should be paid to assessing the area's visual perspective. If there are any significant terrain features in or near the area (to include distant horizons) they must be annotated on the slide area map.

5.4.3.1.4. Slide Takeoff. Head the aircraft into the wind if practical. Increase collective pitch and apply cyclic control as necessary to attain takeoff speed. The aircraft will normally fly off the surface as ETL is attained. Some aft cyclic may be necessary to prevent excessively nose-low attitude. Continue acceleration to climb airspeed. Maintain constant alignment during the takeoff with tail-rotor pedals throughout the maneuver. To practice this takeoff, use approximately 5% torque less than required to hover at a four-foot skid height.

6.5. All missile alert facilities (MAFs) are considered operational sites.

6.5.3. Do not descend below 50 feet AHO or decelerate below 50 KIAS during the eval.

6.6. All LFs are considered unprepared landing sites. Site diagrams will be prepared for all LFs IAW paragraph **6.5.1.** with the exception that GPS coordinates will not be included on the diagrams for security reasons.

6.6.1. Crews should review the site diagram when practical, prior to accomplishing the unprepared site approach, landing and takeoff.

6.7.1. (Added) Crews must constantly be aware of the effect of changing temperatures, PA and gross weight on power available, required, and the power margin. As site elevation increases, even small changes in temp and gross weight may affect power available and required. Unless conditions are the same as those at a previous LZ during the same sortie, aircraft commanders will ensure that a full reconnaissance is performed, and ensure TOLD is recomputed for each LZ where conditions are worse. Better conditions do not relieve the Aircraft commander from reassessing power available, required and the power margin for a new landing area. When conducting repeated operations in an LZ, Aircraft commanders will ensure that TOLD is recomputed as the situation dictates in order to maintain the crews' awareness of aircraft capabilities.

6.11.1. (Added) Unprepared Site Selection for Training. Day unprepared landing sites require 25 feet obstacle clearance. Night unprepared landing sites require 1 RD obstacle clearance. The following exemptions apply:

6.11.1.1. MAFs: Day, night unaided, NVG operations.

6.11.1.2. LFs: Day, NVG with scanner.

7.2.1. MAFs meet the illumination requirements for helicopter landing areas.

7.5.1. (Added) Unaided Night Site Selection for Training. Night unprepared landing sites require 1 RD obstacle clearance. MAFs are exempt.

7.9.2. NVG instructors must be low light certified (LLC) prior to performing in-flight NVG instruction.

7.10.1. AFSPC minimum enroute altitude for NVG operations in surveyed low-level areas is 300 feet AGL with an operative radar altimeter. If the radar altimeter is inoperative, minimum enroute altitude is 500 feet AGL. If outside a surveyed low level area, the minimum enroute altitude is 500 feet AGL.

7.10.3. (Added) **Certain operational missions such as range surveillance or searches may require flight below 500 feet outside of a surveyed low-level training area. In these cases, 300 feet AGL is the minimum altitude for the specific area of operations and an operational radar altimeter is required. The aircrew will define the area boundaries and locate significant obstructions prior to descending to 300 feet AGL.**

Table 7.1. (Added) Minimum Enroute Altitude for NVG Operations.

Operating In Low Level Area	Operative Radar Altimeter	Minimum Enroute Altitude
X	X	300' AGL
	X	500' AGL
X		500' AGL

7.11.1. Reference AFI 11-202, Vol 3. para **5.17.3**.

7.11.1.5. (Added) Taping of exterior lights is not authorized.

7.11.2. **Warning**:

Use of hand-held laser pointers is restricted to outside the cockpit/cabin. The individual using the pointer will hold the pointer outside the helicopter (i.e. out an open door or window) and use it to point at features outside the helicopter.

7.11.2.1. Additional approved interior lighting has been included in the **T.O. 1H01UN-4,** ***UH-1 Illustrated Parts Breakdown***.

7.11.2.2. The secondary lights must be sufficiently turned on to illuminate the majority of the engine/ transmission gauges so the crewmembers can adequately see them without pointing an additional light source at them (fuel gauge excepted).

7.12.1. The chem-light will still be attached, even if the hoist hook has a rescue device attached.

7.12.2. One chem-light will also be attached to one paddle.

7.13.1. NVG Site Selection for Training (no scanner). Night unprepared landing sites require 1 RD obstacle clearance. MAFs are exempt.

7.13.2. NVG Site Selection for Training (with scanner). Night unprepared landing sites require 1 RD obstacle clearance. MAFs and LFs are exempt.

7.15.2. (Added) If winds at the intended landing site cannot be determined, the pilot should be especially alert to aircraft performance on final approach. During all approaches, on short final before the helicopter is committed to land, analyze these three variables: proper closure rate, descent rate under control, and power increasing but below hover power.

7.18. (Added) NVG Focusing Policy:

F 4949 NVG Inspection and Initial Adjustment and F 4949 NVG Adjustment and Assessment Procedures are found in **AFI 11-2H-1 Vol 3, CL-1**, ***H-1 Helicopter Crew Briefing Guide/Checklist***.

7.18.1.1. Eye Lane focusing minimums. Do not fly with NVGs that fail to meet the visual acuity standard of 20/40 in the eye lane.

7.18.1.2. Hoffman ANV-20/20 tester minimums. Do not fly with NVGs that fail to meet the visual acuity standard of 20/45 low light and 20/40 high illumination.

7.18.2. (Added) It is essential to remember that improper adjustment of NVGs can severely degrade visual acuity. If you are using an eyelane, it is important to view the chart from the proper distance (20 feet), because a difference of only a few inches can affect the apparent function of NVGs.

7.18.3. (Added) Prior to using the NVGs in-flight, aircrew members need to confirm the IPD and diopter settings, mount the goggles to the helmet and accomplish an infinity focus of the NVGs. Remember, if an eyelane was used to accomplish the initial adjustment then accomplish an infinity focus by refocusing on an object (at least 75 feet away) with strong vertical and horizontal features. The infinity focus is accomplished by using the objective (front) ring only. The diopter adjustment should never be changed from the setting determined in the eyelane or from the 20/20 test set. There is no need to accomplish an infinity focus on the NVGs when the 20/20 test set is used.

7.18.4. (Added) Further information on the F 4949 NVGs may be found by calling Air Force Research Laboratory, formerly Armstrong Laboratory. DSN 474-6140 / DSN 474-6561 ext. 140.

8.6.7. (Added) AFSPC helicopters units will not conduct night unaided searches. Night searches must be preformed using NVGs.

8.7.7. (Added) Intensity of Coverage. The size of the search area, number of search aircraft available and the probability of finding the objective determine the intensity of search coverage. Two types of search coverage are preliminary and concentrated.

8.7.7.1. Preliminary search coverage is used during the initial phases of the mission, electronic searches and during night searches when appropriate. It permits rapid and reasonably thorough coverage of the primary area. Use this type of search coverage if the search objective can be easily located, sighted or contacted. Generally use route, parallel and/or creeping line search patterns with higher altitudes, faster airspeeds and greater track spacing.

8.7.7.2. Concentrated search coverage is used during the maximum effort phase of a mission or when attempting to locate a sighting or objective whose location is fairly well known. This type of search coverage results in a more thorough search of the objective area. Generally use expanding square, parallel, creeping line or sector search patterns at low altitudes, slow airspeeds and smaller track spacing.

8.8.7.3. Parallel Arc. This pattern is used by search aircraft in areas where DME, TACAN, VORTAC, or similar distance navigation equipment is available. It gives the benefit of accurate track guidance and is also particularly useful in areas where the terrain is flat and homogeneous (i.e., all trees, barren or snow covered). This type of pattern is well suited to areas encountering strong winds. The parallel arc consists of a series DME arcs flown between the two radials bounding the search area. Track spacing, in miles, is equal to the increase or decrease in DME on successive arcs. Once the search area is plotted, four radial and/or DME fixes can be determined to define its boundaries. The pattern is flown from radial to radial along the selected arcs.

8.8.8. (Added) Search Altitude. Base search altitude on the object of search, weather, location aids used, and any other known factors. Lower search altitudes afford a better chance of seeing an object. For preliminary searches, use higher altitudes to detect possible signals at greater distances. Recommended search altitudes are shown in Table 8.7 (Added).

8.8.8. (Added) Table 8.7. (Added) Recommended Search Altitudes.

Over Water	
500 feet and below	Survivor without raft or dye marker
500 feet to 1000 feet	Survivor in raft without dye marker or signaling device
1000 feet to 2500 feet	If survivor has dye marker
1000 feet to 3000 feet	If survivor has signaling device/radar reflector
2000 feet to 3000 feet	When expecting to find wreckage during the initial phase of the mission
500 feet to 2000 feet	Night
Over Land	
500 feet	Survivors on level terrain with heavy foliage
1000 feet	Survivors on level terrain with light foliage
500 feet to 1000 feet	Survivors in mountainous terrain
2000 feet	When expecting to find wreckage
1000 to 2000 feet	Night
Electronic Beacons	
8000 feet or higher	

8.8.9. (Added) Search Speed:

8.8.9.1. During preliminary searches, use recommended airspeed computed from the flight manual. This allows the maximum area coverage for the least fuel.

8.8.9.2. During concentrated searches, consider the time available to search the area in determining the search airspeed. Use of maximum endurance airspeed maximizes the time available, but a slower airspeed may be desired, depending in the visibility, vegetation, and size of the search object. Avoid prolonged operations in the danger areas of the helicopter's height-velocity diagram. Maintain safe-single-engine airspeed during search patterns whenever possible. If the mission dictates flight below 50 KIAS, ensure an emergency escape route is available and briefed.

8.8.10. Track Spacing. Determine the track spacing that permits the best chance of objective detection and best use of search resources. Normally, use greater track spacing during preliminary searches than during concentrated searches. For concentrated searches, assuming adequate time is available to search the area, track spacing should not exceed twice the visual detection range. Use the visual detection ranges specified in Table 8.2. and crew judgement to determine detection ranges.

8.11.2. Aircraft commanders should ensure that the on-scene commander or controlling agency is familiar with these Echo codes prior to initiating the search.

9.6. Minimum enroute separation between aircraft is 500 feet when flying below 500 feet AGL. On tactical flights, aircrew may close the formation to 3-6 RD (prebriefed fluid or staggered) no earlier than the IP. If prebriefed to transition to staggered formation; the formation may be closed to 1 RD for final approach and landing.

9.6.1.1. Lateral separation for AFSPC is 3-6 RD, 3 RDs minimum.

9.6.1.2. Minimum separation for AFSPC is 3-6 RD, 3 RDs minimum.

9.15. When conducting the following maneuvers for training purposes, aircrews will preface the appropriate call with "Simulated." E.g. "Lead, two is simulated BLIND ALLEY."

9.18.1. Unless required due to tactical concerns, aircrews will not attempt to descend out of IMC to VFR conditions without a proper ATC clearance.

10.1.1. During the enroute phase, the flight will be at or above 100' AHO minimum.

10.2.1. All AFSPC special guidance on tactical operations is embedded in appropriate sections throughout this instruction.

10.2.1.1. (Added) AFSPC low-level tactical navigation training areas are defined in accordance with AFI 13-201, *Air Force Airspace Management*. AFSPC low-level tactical navigation training areas are large geographic areas established for random VFR, low altitude navigation and mission training. Activities will be in accordance with all applicable FARs and flown at an airspeed of 250 KIAS or less.

10.2.1.2. (Added) AFSPC helicopter flights will define/establish their specific low altitude training area boundaries using readily identifiable geographic features and/or GPS coordinates. These coordinates and boundaries will be published within their local Chapter 18. These training areas must comply with all subparagraphs of 10.2 in AFI 11-2H-1 Vol 3.

10.2.2. Identify all man-made obstacles higher than 100 feet AGL on the flight map. Include AGL altitudes and standard symbology on the map.

10.11. The reference in the warning is 3 to 3 1/2 seconds.

10.15.1. Any aircrew member identifying a threat will make crew advisory calls throughout the maneuvering. Maintain 150 AHO for all evasive maneuvering.

10.15.3. Formation Attack Warning Considerations. Prior to calling a formation evasive maneuver, the crewmember calling the break must ensure that the entire formation is clear in the intended direction, and that no collision hazard exists between aircraft. Each aircraft will clear in the intended direction prior to turning. Pilots must remain aware of each aircraft's position in the flight, and maneuver in a manner that does not restrict the other aircraft's ability to maneuver.

10.15.6.7. (Added) Examples of threat calls are: "BREAK LEFT, BANDIT, TEN O'CLOCK, HIGH, FIVE MILES, FAST MOVER." "BREAK RIGHT, SAM, FOUR O'CLOCK, LOW, TWO MILES."

10.20.2. Two RD clearance provides at least 25 feet clearance from obstacles. MAFs and LFs are exempt from this requirement.

10.20.4.2. Descent below 100 feet AHO is authorized once the landing area is positively identified and the aircraft is in a position to land or accomplish a tactical approach.

12.37. An anchor cable fabricated IAW paragraph 12.20.1 will be used to secure the rope ladder to the aircraft cargo tie down rings. Ensure the steel bolt is installed through the anchor cable terminal ends from the bottom up with the lock nut and safety pin on top.

Chapter 17

MAJCOM PROCEDURES

(Added) NOTE: AFSPC supplemental material is embedded within the basic AFI 11-2H-1 Volume 3, which would otherwise be contained in paragraphs 17.1. through 17.16. The following AFSPC unique procedures provide a detailed description of AFSPC missile and space launch support missions. AFSPCI10-139, ***Helicopter Capabilities and Mission Descriptions*** is the source document for AFSPC Missile and Space Launch Support Missions.

General. Air Force Space Command uses helicopters to support ICBM operations at F.E. Warren AFB, Wyoming; Malmstrom AFB, Montana; and Minot AFB, North Dakota. Representative missions include Emergency War Order Support, security operations, convoy support, and operations and maintenance support. In addition, Air Force Space Command uses helicopters to support space and missile launch operations at Vandenberg AFB, California. The purpose of this chapter is to describe AFSPC operational procedures for ICBM and space launch/range support.

Section A–AFSPC MISSILE AND SPACE LAUNCH SUPPPORT MISSIONS

17.18. (Added) Mission. The mission of AFSPC helicopter flights is to provide helicopter support along the full spectrum of conflict to each parent space wing. Helicopters provide a flexible, rapid response platform to support space wing efforts to generate and/or launch sorties, to ensure the physical security of ICBM weapon system components and high-value space-launch systems, and to support operations and maintenance in sustaining the ICBM alert rate and the ability to launch spacecraft.

17.18.1. The type of support required is dependent on the specific scenario, and may include such missions as security force response, convoy operations, delivery of essential maintenance parts or equipment, or personnel transport. Units will posture their resources to provide support to the maximum extent possible.

17.18.2. The following paragraphs outline standard and/or routine missions flown by AFSPC Helicopter Flights (HFs). This list is not all-inclusive. Contingency and/or special missions can be flown on a case by case basis.

17.18.2.1. Security *Force Insertion*. This mission includes the capability to support the tactical insertion of security response forces (Backup Force, Augmentation Force, MK-19 Team, etc.) for security situations where hostile or unauthorized personnel are on missile sites, or attacking convoys enroute. The time into action requirement is contained in DOD 5210.41M.

17.18.2.2. *ICBM Convoy Operations*. Helicopters are used to support the unit's nuclear security mission due to potential vulnerability involved in off-base movements of weapon convoys. Helicopters will provide airborne surveillance for any off-base weapon movement, and be prepared to respond with an Airborne Fire Team (AFT) if the situation warrants an armed response. Off-base movements will not be initiated without helicopter support. The space wing commander may waive this requirement when in his/her estimation, the need to move the resource outweighs the decreased security posture of an unescorted convoy. This mission stems from requirements contained in DoD 5210.41M.

17.18.2.3. *Security Force Transportation*. Helicopters may be used to transport security forces responding to a security situation. This support usually will occur when a missile complex is in response condi-

tion two (weather or road conditions have affected response to all or part of the Launch Facilities (LFs) and the site(s) is/are not accessible), or when other factors preclude the timely response of security forces.

17.18.2.4. *Range Security, Surveillance and Protection*. Helicopters are used to survey launch range hazardous areas and ensure the security of launch complex facilities and equipment during ICBM and space launch activities. An Airborne Range Security Team (ARST)/member is carried on board the helicopter to provide a timely response to any security situation. In addition, helicopters perform fire suppression to protect national assets including space launch infrastructure and launch vehicles.

17.18.2.5. *Aerial Photography*. Provide an aerial platform to photographically record ICBM and space-launch operations for post-launch examination. Aerial photography missions are conducted at the user's request.

17.18.2.6. *Direct Mission Support.* Helicopters may be used to transport military, government, contractor, and civilian personnel and/or equipment items for the purpose of conducting duties in direct support of the Wing's mission. The Operations Group commander is the approval authority for these missions. This category includes (but is not limited to) missile crew transport, maintenance or logistics support, emergency PC document change support, or emergency flood or fire surveillance of critical facilities.

17.18.2.7. *MEDEVAC/MAST/SAR.* AFSPC helicopters can be used for MEDEVAC/MAST/ SAR provided it does not interfere with their primary military mission. Use of helicopters for MEDEVAC/MAST/ SAR is at the discretion of the supported wing commander.

17.18.2.7.1. *Medical Evacuation (MEDEVAC).* Helicopters can be used for the emergency transport of both military and civilian personnel when essential to the preservation of a life or limb of a patient.

17.18.2.7.2. *Military Assistance to Safety and Traffic (MAST).* Certain helicopter units are designated as MAST units and are tasked to provide assistance in serious civilian medical emergencies (i.e., situations when an individual's condition requires air evacuation to a medical care center as soon as possible to prevent death or aggravation of illness or injury). Assistance may be provided if it does not interfere with the military mission. The authority for the MAST mission is found in the Defense Appropriations Act, Public Law 93-155.

17.18.2.7.3. *Search and Rescue (SAR).* Under the auspices of Joint Publication 3-50, *National Search and Rescue Manual Volume 1,* AFSPC helicopters can be used in the SAR role for both military and civilian situations. Air Force missions are coordinated by, and will be directed by the Air Force Rescue Coordination Center (AFRCC).

17.18.2.8. *NASA Space Transportation System (STS) Operations.* AFSPC helicopters are required to deploy to Edwards AFB CA to provide security sweeps of the space shuttle landing runway and nearby terrain when a space shuttle recovery at Edwards AFB is planned or anticipated. Security response forces are carried on board the helicopter to respond to any security situation.

17.18.2.9. *Other Support*. Helicopters are used to support a variety of activities such as exercises, support to military and civilian distinguished visitors or orientation, familiarization and incentive flights. Comply with DoD policy on the use of government aircraft and air travel, and DoD Directive 4500.43, *Operational Support Airlift*. Other examples of this type of support include:

17.18.2.9.1. *Exercise Support.* AFSPC helicopter units are frequently tasked to support AFSPC, other command, and Wing exercises. 20 AF/DOH is responsible for validating requests for non-wing exercise helicopter support. If the request is valid and can be supported within the command's flying hour pro-

gram, 20 AF/DOH will coordinate with the appropriate unit to provide the support. Wing commander is the approval authority.

17.18.2.9.2. Fire Suppression. Helicopters may be used to suppress fires, transport fire fighters, perform survey and mapping flights, or perform resupply missions. Helicopter support to wildland fires is specified in Mutual Support Agreements with national, state, and local agencies in coordination with Wing fire departments.

17.18.2.9.3. *Assistance to Civilian Law Enforcement Agencies*. All requests for assistance from civilian law enforcement agencies (LEAs) will be processed IAW AFI 10-801, ***Assistance to Civilian Law Enforcement Agencies***.

17.18.2.9.3.1. Assist law enforcement agencies to the maximum extent practical, provided it does not interfere with the primary military mission.

17.18.2.9.3.2. Requests for counterdrug support will be directed to Operation Alliance at Biggs Army Air Field, Fort Bliss, Texas. Operation Alliance serves as the single point of contact for all law enforcement agencies (federal, state, local) requesting DoD counterdrug support. Operation Alliance will review, prioritize, and coordinate counterdrug support requests and forward them to Joint Task Force-Six (JTF-6) at Biggs. Once JTF-6 reviews the LEA request and determines that it meets all necessary legal and operational parameters, requests will then be routed to the wings, with information copies to HQ AFSPC/DOSH and the NAFs. Approval of counterdrug mission support will be at the discretion of the wing commander.

17.18.2.9.3.3. *Military Support to Civil Authorities*. Request for helicopter support by civil authorities will be handled IAW AFI 10-802, ***Military Support to Civil Authorities***. See AFI 11-2H-1 Vol 3, for additional information.

Section B– AFSPC ICBM AND SPACE LAUNCH SUPPORT PROCEDURES

17.19. Convoy Procedures. Conduct convoy escort as specified in AFSPCI 31-1101, ***Intercontinental Ballistic Missile (ICBM) Systems Security Standard (DODUCNI) (FOUO)*** and this chapter.

17.19.1. General. Helicopters are assigned to support the nuclear security mission due to the vulnerability of off-base weapon movements. Accompany off-base weapon movements with a surveillance helicopter when weather and safety restrictions do not prohibit flight.

17.19.1.1. The deterrent value of having helicopters overhead is important, but its presence should not be so obvious that it presents an easy target or a distraction to the public. Assume anyone attempting to hijack a convoy will be well informed on convoy and/or helicopter operations and will more than likely be armed with weapons capable of combating armed escort personnel as well as the surveillance helicopter. Denial of a good target is the key to success.

17.19.1.2. Denial of a target can be accomplished using a combination of distance and airspeed. Static or stereotyped procedures are the easiest to ambush. Therefore, use variety and ingenuity when maintaining surveillance. Surveillance remains paramount. Survival of the helicopter is essential to the successful deterrence of an attempted hijacking.

17.19.1.3. The wing/group commander is the command authority for the convoy and exercises operational control over the helicopter resource. His directions are normally received through wing security control or the wing command post, depending on location. The convoy commander is the on-scene com-

mander for the ground forces associated with the convoy; however, authority or responsibility as aircraft commander will not be relinquished.

17.19.2. Normal Procedures:

17.19.2.1. Prior to departure, ensure the aircrew is briefed on applicable items contained in AFSPCI 31-1101. Brief the Airborne Fire Team (AFT) on surveillance and deployment procedures.

17.19.2.2. Aircrew members should consider arming themselves with a personal weapon (9-mm) and wearing personal body armor during convoy operations.

17.19.2.3. Prior to departure, establish and maintain radio contact with the convoy.

17.19.2.4. Maintain communications with the support base through the command post, security control, or the helicopter operations section.

17.19.2.5. During normal convoy surveillance, fly the helicopter at varying altitudes and airspeeds. Minimum altitude is 300 feet AHO within surveyed low-level areas, 500 feet AHO otherwise. Factors such as terrain, weather, and fuel will dictate operations.

17.19.2.6. Remain within five minutes of the convoy unless diverting for weather.

17.19.3. Convoy Contingency Operations (for increased threat or actual hostilities):

17.19.3.1. Threat evasion during a contingency operation is directly proportional to your knowledge of evasive maneuvering. Refer to and comply with chapter 10 for tactical flight and landing considerations.

17.19.3.2. Immediately evade to a safe distance and altitude (high or low) to avoid hostile fire. Attempt to maintain knowledge of the exact position of the convoy at all times. Relay this information to the command post or helicopter operations section.

17.19.3.3. Be prepared to tactically insert the AFT, at the direction of the on-scene command authority, in order to reinforce the friendly ground forces or to halt and/or slow the movement of a hijacked weapon. Provide the AFT team chief with the approximate direction and distance to the convoy hostilities prior to the team's off-loading. The aircraft commander will coordinate with the On Scene Commander (OSC) regarding the deployment site. Landing at the deployment site should not unnecessarily jeopardize the helicopter and/or diminish its effectiveness as a surveillance platform.

17.19.3.4. Your survival and subsequent role as a tactical radio relay is paramount. If the aggressors have access to your radio frequencies, "in-the-clear" radio transmissions are a liability. An "in-the-clear" transmission of your intention to insert the fire team could result in an ambush. Your survival and the survival of your fire team depend upon your radio discipline as well as your flight skills.

17.19.3.5. A choke point operation is a measure of last resort and is an attempt to prevent further movement of a hijacked weapon. Once the decision is made, land at a choke point, shut down the engine, remove the key, and abandon the aircraft.

17.20. (Added) Security Force Insertion Procedures.

17.20.1. Security force insertion usually occurs as close to the objective as threat, terrain and safety permit. Security Force insertion may involve all the unit's available resources.

17.20.1.1. Backup Force (BF) Employment. Three aircraft are normally used for a BF response. A BF employment should be planned and flown like any tactical, and if required, formation mission. However, all efforts should be made to expedite. The aircraft commander (or lead aircraft commander) is responsible for coordinating with the senior security team member to determine the current

threat and plan of action. The aircraft commander/lead aircraft commander then briefs the other crewmembers. Copilots/flight engineers may be back-briefed by their respective aircraft commanders if needed to accomplish preflight, TOLD, and engine start (if qualified).

17.20.1.2. If insufficient pilots are available, aircraft may be flown single pilot, but not low-level and not in formation.

17.20.1.3. For training purposes, landings are restricted to authorized landing areas unless landowners' permission is obtained.

17.20.1.4. All security police will be manifested and receive appropriate passenger briefings (unless previously trained on helicopter operations).

17.21. (Added) NASA Space Shuttle Security Procedures:

17.21.1. The Space Shuttle support mission at provides security and surveillance of the intended shuttle landing area. The aircrew provides airborne surveillance prior to the landing, and responds to contingency situations as necessary. Typically the aircrew attends a mass briefing three hours prior to the anticipated landing and then flies the surveillance mission. Specific procedures are outlined in the recovery support plan and unit local directives. Additionally, aircrews participate in periodic training exercises designed to train and test response to contingency situations.

17.22. (Added) Range Security/Surveillance Procedures:

17.22.1. The launch security and surveillance mission supports space and missile launch operations for the Western Range. The aircrew typically flies from three hours to one hour prior to each launch and ensures the boat exclusion area and hazardous impact areas are clear of unauthorized personnel and boats. Frontier Control is the controlling agency and the aircrew establishes and maintains radio contact, providing status as necessary. Unauthorized contacts are notified via radio, loudspeaker, or as a last resort, in person (if on land). Security Forces personnel handle personnel contacts. Specific procedures are outlined in unit local directives.

17.23. (Added) Cable Route Survey Procedures:

17.23.1. The principle component of cable route survey missions is low-level flight. Minimum altitude is 100 feet AHO or according to the flight manual height/velocity chart, whichever is higher. Refer to and comply with chapter 10 for low-level flight considerations. Hover taxiing to accomplish this survey is not authorized.

17.23.2. Two qualified pilots will be used while accomplishing this mission. The pilot not flying the aircraft will help in tracking the cable route and keep the pilot flying advised of potential hazards and obstacles. Additionally, an observer will be in the cargo compartment to observe the condition and security of the buried cable.

17.23.3. As with all types of low level operation, thorough flight planning is critical to mission safety. Pilots should carefully review the appropriate maps for anticipated hazards to low level flight for their area of operation. Crew briefings should emphasize crew coordination procedures and climatic concerns (e.g., winds, turbulence, visibility, DA). Consider the activity of other low flying aircraft, such as military aircraft on published low-level routes and civilian agriculture aircraft and livestock.

17.23.4. Landing on the cable right-of-way is authorized. Complete remote site landing procedures prior to landing. The pilot should select the safest landing area on the cable right-of-way within walking distance of the area requiring inspection. Possible damage to personal property should be considered.

17.23.5. Avoid checking cable routes from a direction that will place the aircraft facing directly into the sun low on the horizon which would make the detection of power lines and suspended cables extremely difficult.

17.23.6. Cable route survey can be a physically and mentally demanding mission. Frequent exchange of cockpit duties and shorter duration sorties are helpful in minimizing the fatigue factor.

17.24. (Added) Aerial Photography Procedures . Photographic support is normally associated with launch operations. Photographic records of launch activities provide valuable data used in post launch analysis. Both still photographs and video footage are taken during each launch. The Operations Directive determines what, if any, photographic support the customer desires. Typically, the aircrew takes off 1 hour prior to launch, establishes a pattern at 4000 or 5000 feet MSL, and maneuvers the aircraft to arrive at the Test Support Point at T-0. The four photographers are usually stationed in the left cabin door. Specific procedures are outlined in unit local directives.

Section C–Fire Suppression Operations

17.25. (Added) General. This section is for fire bucket operations using the Bambi bucket and the Sacksafoam kit. Refer to the manufacturer's operating manuals for a complete discussion of these items.

***WARNING*:** Wildland firefighting is one of the most hazardous missions performed by the UH-1N. During actual fires, the entire crew must exercise extreme caution due to the rapidly changing conditions and multiple aircraft operating in and around the fire area. If at any time the safety of the crew is in question, aircraft commanders will cease operations and clear the area. Avoid overflight of ground personnel, structures, vehicles, etc. to the maximum extent possible.

17.25.1. Fire Behavior. This section covers three areas that are critical to understanding a fire. All fire fighters must have at least a rudimentary understanding of the environment that they are operating in, and that is the subject of the first section, the wildland fire environment. The other areas addressed are the parts of a fire and fire terminology, two areas essential to allow for quick, concise communication while operating on a fire.

17.25.1.1. Wildland fire environment. The wildland fire environment triad consists of the topography of the region, the fuel (vegetation) that is in the region and the region's weather. Realize that changes in each part of this triad will affect the nature not only of the fire, but also how helicopters will be utilized to fight the fire.

17.25.1.1.1. Topography. The terrain around a fire will determine a fire's behavior as well as your plan for attacking the fire.

17.25.1.1.1.1. Aspect. Aspect is the position of the terrain relative to the points of the compass. The aspect of different terrain will determine at what time of the day the temperature of that terrain is at its peak. This is important because the higher the temperature, normally the drier the vegetation and the more likely that that vegetation will burn. In general, terrain with an East aspect will heat early in the day, with peak temperatures at mid-morning. Terrain with a North aspect will peak at mid-day, and terrain with a South or West aspect will peak in temperature in the mid-afternoon. Local environmental factors, such as wind, weather and temperature inversions can affect this. South and West aspects will generally be drier and hotter than North and East aspects and will burn more readily.

17.25.1.1.1.2. Slopes. Fire will burn up and down a slope; however, fire will burn up a slope approximately sixteen times faster than it will burn down a slope. This is because the rising heat from the fire pre-heats the vegetation above it, drying it out and allowing it to ignite more quickly and

burn more intensely. Fires are generally not attacked while burning up a slope. Normally fire fighters attempt to stop a fire at the top of a ridge or as it backs down the leeward side of a ridge.

17.25.1.1.2. Fuel. There are three basic types of fuels for fire fighting purposes, grass, brush, and large trees or brush. The type of fuel is one of the most important factors that will dictate the type of fire. Horizontal continuity, which is defined as the spacing of the vegetation, will also be a factor.

17.25.1.1.2.1. Grass. This is defined as vegetation that is up to º" in diameter. It is also called a "light" fuel. Fire in this type of vegetation will burn very quickly, but can also be extinguished very easily.

17.25.1.1.2.2. Brush. This is defined as vegetation that is ¾" to 2" in diameter. It is also called a "moderate" fuel. This vegetation will burn more slowly but also with more intensity than grass fuels. Type II helicopter operations can still be very effective on this type of fuel.

17.25.1.1.2.3. Large trees/brush. This is defined as vegetation that is greater than 2" in diameter and is also called a "heavy" fuel. This will burn very slowly, but with a great deal of intensity. Fire in this type of fuel will be much more difficult for Type II helicopter fire bucket operations to be effective.

17.25.1.1.3. Weather. Weather is always a factor for any air operation and will affect fire bucket operations in a number of ways, but of primary concern is the wind. Determining the wind direction on a fire is not a problem; the challenge is in judging how it will affect your water drops. Other weather components affecting a fire involve humidity and ambient temperature.

17.25.1.2. Parts of a fire. This section will discuss the basic parts of a fire, refer to Figure 17.1. to aid in understanding these terms. Refer to the next section, terminology, for complete definitions of other items.

17.25.1.2.1. Point of origin. This is the location of where the fire started. This can be difficult to determine on a large, complex fire. It may be necessary to request this information to determine the flanks of a fire for water drop assignment purposes.

17.25.1.2.2. Heel or Rear. This is the area near the point of origin. This is also the slowest spreading portion of the fire and is usually upwind or down-slope from the actively burning area of the fire. This area is also generally opposite the head of the fire.

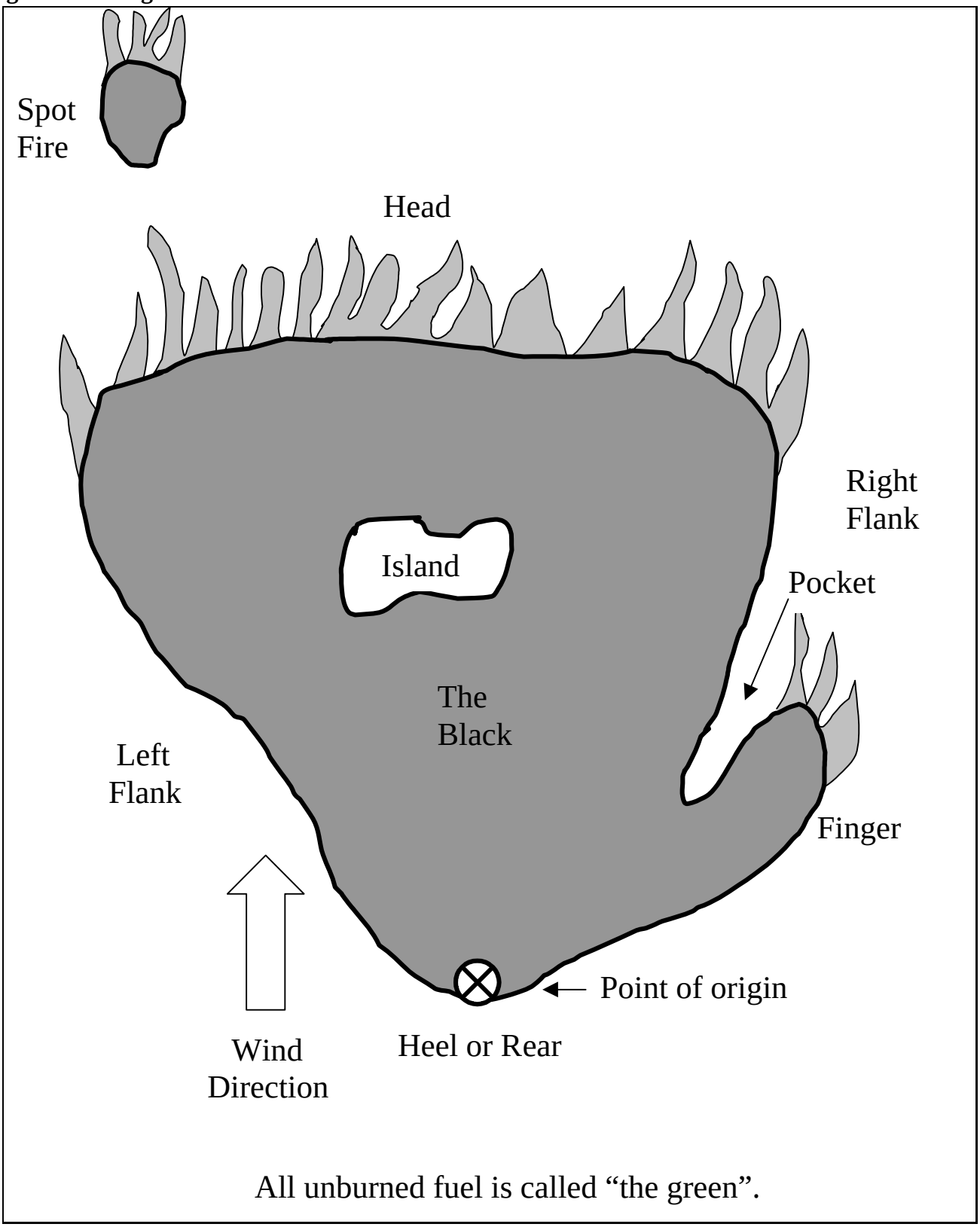
17.25.1.2.3. Flanks . These are the portions of the fire perimeter extending from the heel to the head. There are two flanks, right and left. The designation of left and right is as viewed from the heel. Water drop assignments are often given referencing the flank (i.e. "Make your drops on the left flank starting at the heel and working towards the head.").

17.25.1.2.4. Head. This is the most rapidly spreading portion of the fire perimeter. This is usually where the fire is most active and strongest in intensity. It is also usually downwind and up-slope. Type II and III helicopters are rarely used against targets in at the head of the fire.

17.25.1.2.5. The Black. The portion of the fire area that has already burned.

17.25.1.2.6. The Green. All unburned fuel.

Figure 17.1. Figure 17.1. Parts of a Fire.



17.25.1.2.7. Finger. A portion of the fire perimeter that extends outwards from the main fire area.

17.25.1.2.8. Pocket. An area of unburned vegetation between a finger and the main body of the fire.

17.25.1.2.9. Island. An area of unburned or incompletely burned vegetation surrounded by the main body of the fire.

17.25.1.2.10. Spot Fire. A fire outside the main fire perimeter that has started from sparks or hot embers from the main fire.

17.25.1.3. Terminology. This is a list of important terminology. It is not meant to be a complete list of all terminology, but of the most relevant. Refer to USFS publications for a complete list of terms.

17.25.1.3.1. Anchor Point. A point at which to start constructing a control line. This point normally starts at a barrier, such as a firebreak, which prevents the fire from flanking the control line.

17.25.1.3.2. Backfire (Firing-out). A fire suppression tactic or any intentionally set fire used to consume fuel in the path of the wild fire.

17.25.1.3.3. Blowup . A sudden increase in fire intensity or rate of spread that endangers existing or planned control of the fire. Usually accompanied by one or more of the following: crowning, spotting and/or fire whirls.

17.25.1.3.4. Bucket. The fire bucket itself. Also known as the Bambi bucket.

17.25.1.3.5. Burn (Black). The portion of the fire area that has already burned.

17.25.1.3.6. Cold Trailing. Any procedure used to secure inactive sections of the fire perimeter, including but not limited to: constructing control line, trenching, scattering fuel, felling snags, feeling out hot areas with the back of the hand and mopping up the fire perimeter.

17.25.1.3.7. Control Line. A line constructed to prevent the spread of the fire. This can include man-made or natural fire barriers (i.e. bodies of water, roads, fields and other areas devoid of vegetation).

17.25.1.3.8. Crown Fire (Crowning). A fire that advances from top to top of trees or shrubs, usually independent of any surface fire.

17.25.1.3.9. Direct Attack. A method of fire suppression in which the fire perimeter is attacked directly by water drops, retardant drops or other methods.

17.25.1.3.10. Dozer Line. A control line constructed by a bulldozer plowing up vegetation and leaving bare earth.

17.25.1.3.11. Drop. Releasing the water from the bucket, not to be confused with "pickling" the bucket.

17.25.1.3.12. Fire Whirls. A whirlwind of smoke, fire and hot embers. This is indicative of extreme fire intensity.

17.25.1.3.13. Flare-up. Any sudden acceleration of fire spread or intensification of a fire. Unlike blowup, a flare-up is of relatively short duration and does not affect existing control plans. It may lead to reassigning air assets to ensure control measures are maintained.

17.25.1.3.14. Hand Line. A method of constructing control line by ground personnel using hand tools.

17.25.1.3.15. Hotspot. A particularly active part of a fire.

17.25.1.3.16. Indirect Attack. A method of fire suppression in which suppression actively takes place some distance from the fire perimeter and takes advantage of fire barriers (i.e. constructing dozer or retardant lines outside the flank or head of a fire.

17.25.1.3.17. Pickle. A call made to release the fire bucket, usually made in an emergency situation.

17.25.1.3.18. Safety Zone. An area devoid of flammable material, used for escape in the event the fire threatens to overrun ground personnel.

17.25.1.3.19. Secondary Line. A backup control line established in the event that the primary control line fails to contain the fire.

17.25.1.3.20. Slop Over. A fire that burns across a control line, not to be confused with a spot fire. However, excessive spotting may lead to a slopover.

17.25.1.3.21. Snag (Widow Maker). A standing dead tree.

17.25.1.3.22. Spotting. The creation of spot fires.

17.25.1.3.23. Tie In. The act of securing the end of a section of control line to a barrier or another segment of line.

17.25.1.3.24. Tub. A large collapsible container for dipping water out of.

17.25.1.3.25. Type. In reference to helicopters the USFS recognizes four types of helicopters for fire fighting purposes. Refer to the following table. Card weight capacity refers to the amount of weight the USFS has certified these aircraft are capable of carrying (payload).

17.25.1.3.25. Table 17.1. Helicopter Types.

Type 1	Seats: 16 minimum (pilot included) Card wt. capacity: 5000 lbs Retardant capacity: 700 gals minimum Examples: Bell 214
Type 2	Seats: 10 minimum (pilot included) Card wt. capacity: 2500 lbs Retardant capacity: 300 gals minimum Examples: Bell 204, 205, 212
Type 3	Seats: 5 minimum (pilot included) Card wt. capacity: 1200 lbs Retardant capacity: 100 gals minimum Examples: Bell 206
Type 4	Seats: 3 minimum (pilot included) Card wt. capacity: 600 lbs Retardant capacity: 75 gals minimum Examples: Bell 47

17.25.2. Incident Command System. The incident command system is a civilian method of dealing with a critical situation. It is similar to a military chain of command, but is more fluid and dependent on the situation. All incidents will have an incident commander; however, this authority may be delegated down to the lowest levels. For example, responding as initial attack on a small brush fire, you may find that the incident commander is a fire engine captain. Also, once you have responded to an incident, you become a resource of the incident commander. While flight safety is always paramount, you essentially belong to and must follow the orders of the incident commander. You are not free to end the mission until released by the incident commander and to do so would jeopardize any mutual support agreements between the Air Force and the local government. Refer to the Figure 17.2. to help understand the incident command system.

17.25.2.1. Air Operations. Air operations at an incident may be very simple, consisting of only a helicopter working in a tactical operation (dropping water) or providing logistical support (ferrying

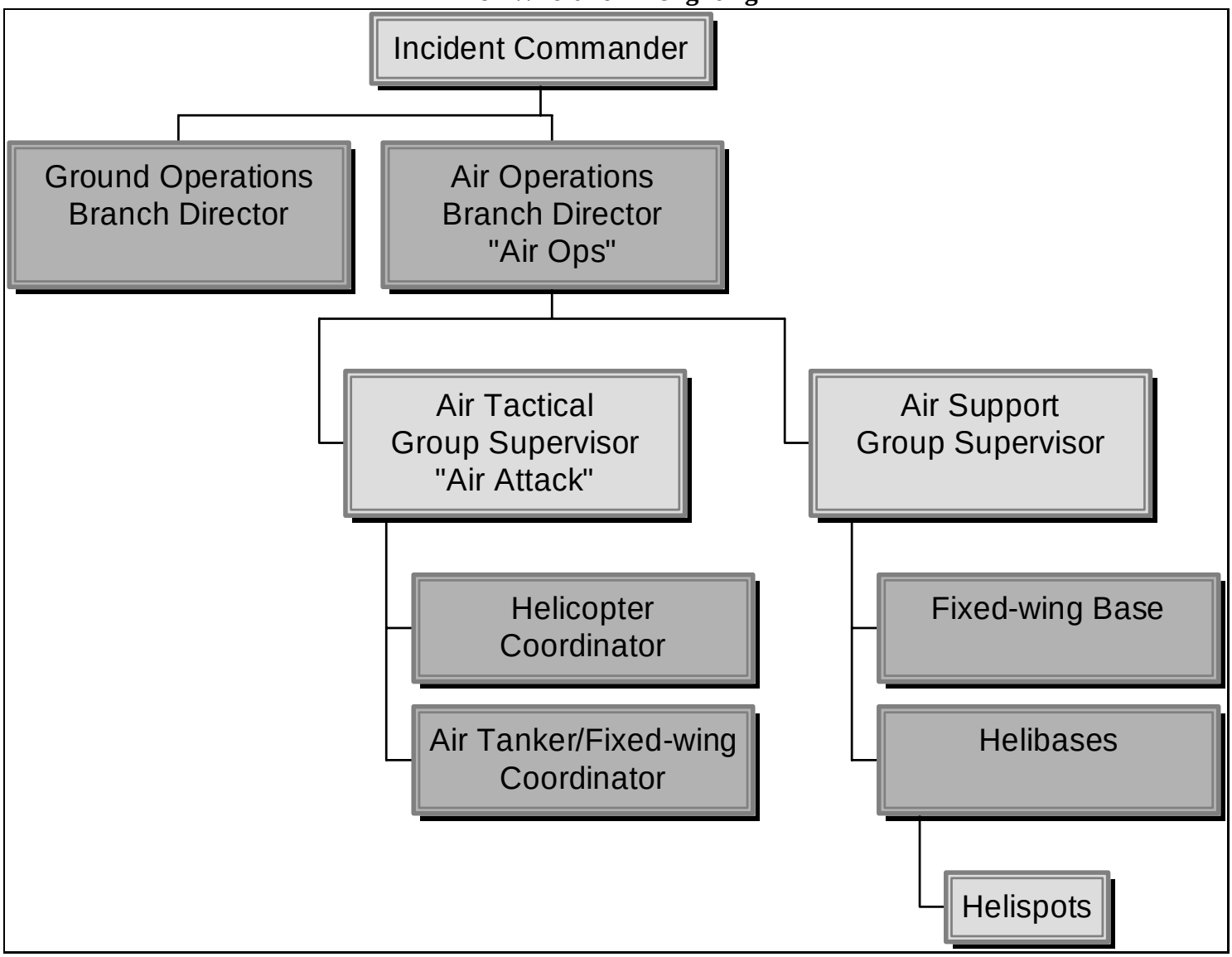
ground personnel). On some incidents, air operations can become very complex, involving many helicopters, and/or a combination of helicopters and fixed-wing aircraft operating at the same time. As the incident grows in complexity, additional layers of supervision and coordination may be required to support effective and safe air operations.

17.25.2.1.1. Air Operations Organization. The Air Operations Branch is responsible for managing all air operations at an incident. This includes both tactical and logistical operations. Prior to establishing the Air Operations Branch, management of aviation operations is the responsibility of the Operations Section Chief (OSC) or Incident Commander if the OSC position has not been activated. The Air Operations Branch Director for an incident is always ground-based.

Figure 17.2. Incident Command System.

Incident Command System

or Wildland Firefighting



17.25.2.1.1.1. Air Tactical Group Supervisor (Air Attack). This person is responsible for coordinating

the airborne tactical operations of fixed- and/or rotary-wing aircraft operation on an incident. This person will normally operate from an airborne fixed-wing aircraft. Helicopter Coordinators and Air Tanker/ Fixed-wing Coordinators may be assigned as required to manage their respective aircraft. These personnel report to the Air Tactical Group Supervisor.

17.25.2.1.1.2. Helicopter Coordinator. Only a very large incident will require the activation of this position. There may also be more than one Helicopter Coordinator on an extremely large fire. This person is responsible for the coordination of all tactical or logistical helicopter missions while in flight over the incident. This position may be operated from an airborne or a ground-based location.

17.25.2.1.1.3. Air Support Group Supervisor. This person is responsible for supporting and managing helibases and helispot operations and for maintaining liaison with fixed-wing air attack bases. This person will provide fuel, supplies, maintenance, retardant mixing and loading, record keeping and will enforce safety regulations.

17.25.2.1.1.4. Helibases and Helispots. A helibase is a large staging area for helicopter operations on a fire. It is normally an unimproved area, such as a large field or campground. A helispot is a smaller area closer to the fire perimeter that serves as a temporary landing location. A helispot may have a water source in it (a tub) or may be used for personnel transfer.

17.25.2.2. Ground Operations. Ground units will consist of engines, brush trucks, tenders, hand crews and bulldozers. The complexity of the fire will dictate the number and organization of these assets. Understand that on a large fire, these will be divided into battalions that are assigned different sections of the fire to work on. Knowing which battalion is in what area can be crucial information when receiving assignments.

17.25.3. Bambi Bucket Information. The 216-gallon capacity Bambi bucket assembly weighs 95 pounds empty. Water and foam weights are computed using 8.3 pounds per gallon. Table 17.2. illustrates the capacity for the various settings on the Bambi bucket.

17.25.3. Table 17.2. Bambi Bucket Settings, Capacities and Weights.

Bucket setting	Volume	Weight
60%	142 gallons	1179 pounds
70%	157 gallons	1303 pounds
80%	175 gallons	1453 pounds
90%	194 gallons	1610 pounds
100%	216 gallons	1793 pounds

17.25.4. Sacksafoam Information. The Sacksafoam system consists of a bag inside the Bambi bucket, a control wire and a panel that is normally installed on the center pedestal of the aircraft. This unit allows for different foams to be used to aid in decreasing the surface tension of the dispensed water. This allows the water to adhere to vegetation better, making it more fire resistant.

17.25.4.1. Concentration must be calculated based on many factors. Realize that different types of foam will also affect the dispense time. Also, when the bucket is cinched down to a smaller size the concentration will increase. This should not affect the concentration greatly and can generally be disregarded with reference to the dispense time.

17.25.4.2. To calculate concentrations or for more information on the Sacksafoam unit, see the Sacksafoam Operator’s Manual dated September 2, 1993.

17.25.4.2. Table 17.3. Sacksafoam Control Box Functions.

Item	Function
On/off switch	Toggle up to turn on Toggle down to turn off and reset
Dispense switch	Toggle up to begin dispensing foam
Dispense time switch	Push buttons to set run time of foam injection pump
Current drops counter	Both counters increment every time dispense switch is toggled up (on). Current drops counter should be reset when Sacksafoam is refilled. Zero counter by pressing reset button.
Total drops counter	Both counters increment every time dispense switch is toggled up (on). Total drops counter can be used to count the total number of drops per day or shift. Zero counter by pressing reset button.
Red power light	Red light is on when power is on.
Orange dispense light	Orange light is on when unit is dispensing foam.
Green mix ready light	Green light is on when unit is ready for next dispense cycle. The green light will go off when the Bambi bucket is dumped.

17.25.4.3. Sacksafoam instructions.

17.25.4.3.1. Set the desired dispense time to by pressing the small buttons on the digital dispense time switch.

17.25.4.3.2. Turn the control box on/off switch on.

17.25.4.3.3. When the bucket is full and lifted clear of the water, momentarily lift the dispense switch to dispense foam.

NOTE:

The first pump run will result in a lower concentration of foam, as the pump has to fill the discharge pipe.

17.25.4.3.4. To reset the dispense time, turn the control box off, change settings, then turn the control box on.

17.25.5. Minimum Crew. The minimum crew is two pilots and one flight engineer. Crewmembers must be live fire qualified; however, the HF/CC or DO may authorize instructors to take fire bucket trainees on actual fire missions to receive their live fire qualification.

17.25.6. (Added) Mission Preparation. Conduct a Fire Bucket Briefing using the attached guide prior to all fire bucket operations. This briefing is in addition to the General Aircrew Briefing; however, it does replace the Sling Briefing for fire bucket missions. The Ingress Checklist will be accomplished per the guidance in the checklist. Complete the Egress Checklist upon leaving the fire area.

WARNING: Pay close attention to the weight and balance/TOLD, C.G. shifts and power applied as these parameters may change rapidly during bucket operations.

17.25.7. (Added) Aircraft Procedures:

17.25.7.1. Means of Drop Control by the Pilot.

17.25.7.1.1. Airspeed and Direction. Drops made into the wind or at slower airspeed increase the concentration of the drop by shortening the swath. Drops made downwind or at higher airspeeds will reduce concentration and increase swath length.

17.25.7.1.2. Altitude. Altitude affects concentration in swath width—the lower the drop, the narrower the swath and the heavier the concentration. Conversely, the higher the drop, the more time the water mass has to break up into droplets and be dispersed by wind drift, therefore, the wider the swath and the lighter the concentration. Obviously, high crosswind drops would have too great a width and dispersal, so lower drops are made in strong crosswinds. Drops made too high result in most of the water vaporizing before reaching the ground and are ineffective.

17.25.7.2. Use standard terminology when flying the bucket. The fire bucket itself is referred to as "the bucket," and the water source is referred to as "the tub" or "the water". Use the word "drop" to release the water. If at any time the presence of the bucket constitutes a hazard, any crewmember may call "Pickle, Pickle, Pickle". If this call is made, the pilot will release the load immediately, without discussion.

17.25.7.3. Set the radar altimeters for the length of the load plus 10 feet. When calling altitudes, flight engineers will relay bucket height above the ground, not aircraft height.

17.25.7.4. Drop Techniques. Water dropping demands more judgement of the pilot than most other helicopter operations, merely by virtue of the many variables involved. The "standard" drop is from a 50-foot bucket altitude and at 50 knots indicated airspeed. This is simply a baseline and each drop will require modifying this "standard". The primary concern should be for flight safety and ground crew safety and low drops may actually "fan" the flames, instead of putting them out. While it is impossible to enumerate all of the possible drop situations, the following will point out some of the techniques and considerations of various types of drops.

17.25.7.4.1. Hover drops (spot drops). Except on isolated snags or trees, hover drops are not recommended on active ground fire, unless well inside a burned area, since the rotor downwash will intensify and spread far more fire than the drop will extinguish. If attempting to concentrate the bulk of a drop on a single target a low airspeed, high altitude drop will be just as effective while avoiding adverse consequences of the rotor downwash.

17.25.7.4.2. Cross-slope drops. Cross-slope drop, whether above or below the fire, usually present no special problems; however, watch your main rotor clearance on the uphill side in steep terrain.

17.25.7.4.3. Downslope drops. Downslope drops low on the slope may be approached cross-slope at a reduced airspeed with a 90-degree descending turn to the target. This allows the pilot flying to better see the target if turning in the direction of the side they are sitting on. Another less recommended method is to come directly over the ridge for the drop. This type of drop requires careful planning, especially in steep terrain. The pilot must pick out objects on top of the ridge above the fire and in the background beyond the fire to line up on, as the downslope drop presents a blind run. This means that the pilot cannot see the target until crossing the ridge above the fire and then only if not obscured by smoke. If the slope is very steep it may be advisable to approach the ridgetop at a reduced airspeed, using caution not to get too slow if downwind or too low when on the leeward side, then drop the nose and make a descending drop off the ridge. Slowing prior to the "dive" reduces the chance of excessive speed. The pullout must be planned to provide adequate terrain clearance in the event the drop is aborted for any reason. Downslope drops may be made at a slower airspeed and are more effective if made into the wind.

17.25.7.4.4. Upslope drops. Although upslope drops afford the pilot a better view of his target than any other type of drop, they should be avoided as much as possible. This drop does not usually allow for good

go-around options and can easily lead to exceeding power available, especially if the drop mechanism malfunctions.

17.25.7.4.5. Drops on structures, equipment or personnel should be avoided unless specifically requested or there is an obvious threat to someone's life.

17.25.8. (Added) Incident Air Traffic Control. Incident air traffic control will be provided primarily by Air Attack. Aircrews will remain clear of the controlled airspace of a fire, establishing contact from the controlling agency, usually Air Attack. Air Attack should provide you with any known hazards, the water source location, an incident altimeter setting and clearance to enter the airspace. If you arrive on a scene without an Air Attack, survey for hazards and a water source, before conducting fire bucket operations.

17.25.8.1. Basic flight rules for approaching or operating in a fire area:

17.25.8.1.1. All aircraft must maintain visual separation. Do not approach, orbit or transition through heavy smoke. Be as predictable as possible and if working with multiple helicopters, work yourself into the established flight pattern to and from the water source/fire. Aircrew should pre-brief actions upon inadvertent IMC.

17.25.8.1.2. Helicopters should approach and operate in the fire area at or below 500 ft AGL and avoid the flow of fixed-wing traffic, your traffic pattern will vary depending on your mission. Air tankers should be approaching at or above 1000 ft AGL and will fly left-traffic patterns.

WARNING: Be aware of the wake turbulence generated by air tankers operating on the fire.

17.25.8.1.3. Air Attack and Helicopter or Fixed-wing Coordinators will be flying in right-hand traffic patterns above 2000 ft AGL.

17.25.8.1.4. For fires involving multiple helicopters from the same unit, one helicopter will assume point of contact responsibilities, and provide a verbal briefing to all incoming unit helicopters. The briefing should succinctly describe the fire, the water source, traffic patterns, frequencies and the plan of attack.

17.25.8.1.5. Aircraft should keep air attack informed regarding their fuel state and report how long they will be able to remain on station in hours/minutes. As you near your bingo fuel update air attack on how much remaining time you have left until you need to depart for refuel.

17.25.8.2. Incident Air Traffic Control Procedures. Clearance must be obtained from Air Attack prior to operating in or near air tanker operating areas. Try to keep all radio transmissions concise.

17.25.8.2.1. Position reports. Make the following position reports to Air Attack.

17.25.8.2.1.1. Inbound to the fire area – Report altitude and direction approaching from when 3 minutes out from the fire area.

17.25.8.2.1.2. In the "traffic pattern" on the fire – Report location and altitude when: inbound to water source, taking off from water source, inbound to fire for water drop, off the fire enroute water source. Sample radio calls would be: "Blade 23 is right base for the water source." "Blade 23 is off the water, enroute the fire." "Blade 23 turning final for a drop on the right flank", "Blade 23 is off the fire, enroute the water source."

17.25.8.2.1.3. Helicopters on other than water drop missions must call for clearance before lift-off for a new mission. Report at any designated "checkpoints' and report prior to entering any air tanker operating areas.

17.25.8.2.2. Notify other aircraft when they are in sight, to avoid lengthy radio transmissions of aircraft describing their location.

17.25.8.2.3. Emergency calls from Air Attack must be heeded without delay. This may be similar to a tactical "break" call and will imply that you are clear in the direction of the break. An example would be, "Tanker 69, break right, Blade 23, break left."

17.25.8.2.4. Assignments . You will receive your assignment from one person though it may be Air Attack, a Helicopter Coordinator, or even the Air Operations Section Chief. Usually the last of these will use the callsign "Air Ops." An assignment may be given at any point, but will normally be given after your radio call is made coming off the water source. Your assignments may be for an extended duration and sound something like this, "Blade 23, Air Attack, I want you to work the right flank with Dozer 06 and help him putting in line until further notice."

17.25.8.2.4.1. If given a specific target, whoever is giving you your assignment should be descriptive of the intended target. They will generally use the terminology presented earlier in this chapter to describe your target. Target designation is a two-way communication process and you must ensure that you are clear on your target. An example of good target description would be: "Blade 23, this is Air Attack, your target is the flare-up on the right flank about half way between the heel and the head of the fire." The aircraft receiving the assignment should acknowledge the assignment and again ensure that there is no doubt of the assignment. This radio call would be similar to this, "Air Attack, Blade 23 copies the target, confirm it is the flare-up near the large stand of trees where that hand crew is working." While confirmation isn't always necessary or even practical, when in doubt, confirm the target.

17.25.8.2.4.2. If there are ground personnel at your target location, they may use a number of means to identify the specific target area for a water drop. Methods used to signal the aircraft include: mirror flashes, flags, surveyors marking tape and smoke. Mirror flashes will be used to draw your attention to the ground personnel in the target area. This may be the only method used, or may be used in conjunction will any of the other signaling methods. Flags will be waved over the ground crews head to draw your attention and then waved toward the specific target area. The surveyors tape or smokes will mark a "hot spot" which is a spot of smoldering material that isn't actively burning, but requires water to prevent it from flaring up later.

17.25.9. Communications. Good, clear communications are essential to fire bucket operations; however, due to the unique nature of local communications they cannot be discussed in depth in this document. Individual units should address this in unit supplements and local training environments.

SECTION D– OPERATIONAL GUIDELINES

17.26. (Added) Radio Frequencies. HQ AFSPC has authorized the use of 266.2, 271.9, 308.8, and 314.3 MHz for helicopter air support operations. The base frequency manager must approve all frequencies used to support wing operations.

17.27. (Added) Operational Requirements .

17.27.1. MAFs are considered operational sites. LFs are considered remote sites. Site diagrams will be maintained for both MAFs and LFs. Mileage and/or time charts from parent base to missile MAF and from any one MAF to any other MAF will also be maintained. Place checklist-size site diagrams and mileage and/or time charts in each mission navigation kit. Aircrews will report any discrepancies between site diagrams and sites to the unit operations officer upon landing.

17.27.2. Obtain landing clearance according to local procedures and AFSPCI 31-1101 . Do not land at LFs with transport erectors or RV and/or G&C and PT vans within the fenced area without proper approval.

17.27.3. Immediately report any unusual digging, building, or activity noted around missile sites or along cable right-of-ways to the base command post.

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